

SOL 4.8 Earth Patterns, Cycles, and Change**Question/Answer Packet**

4.8 The student will investigate and understand the relationships among Earth, the moon, and the sun. Key concepts include:

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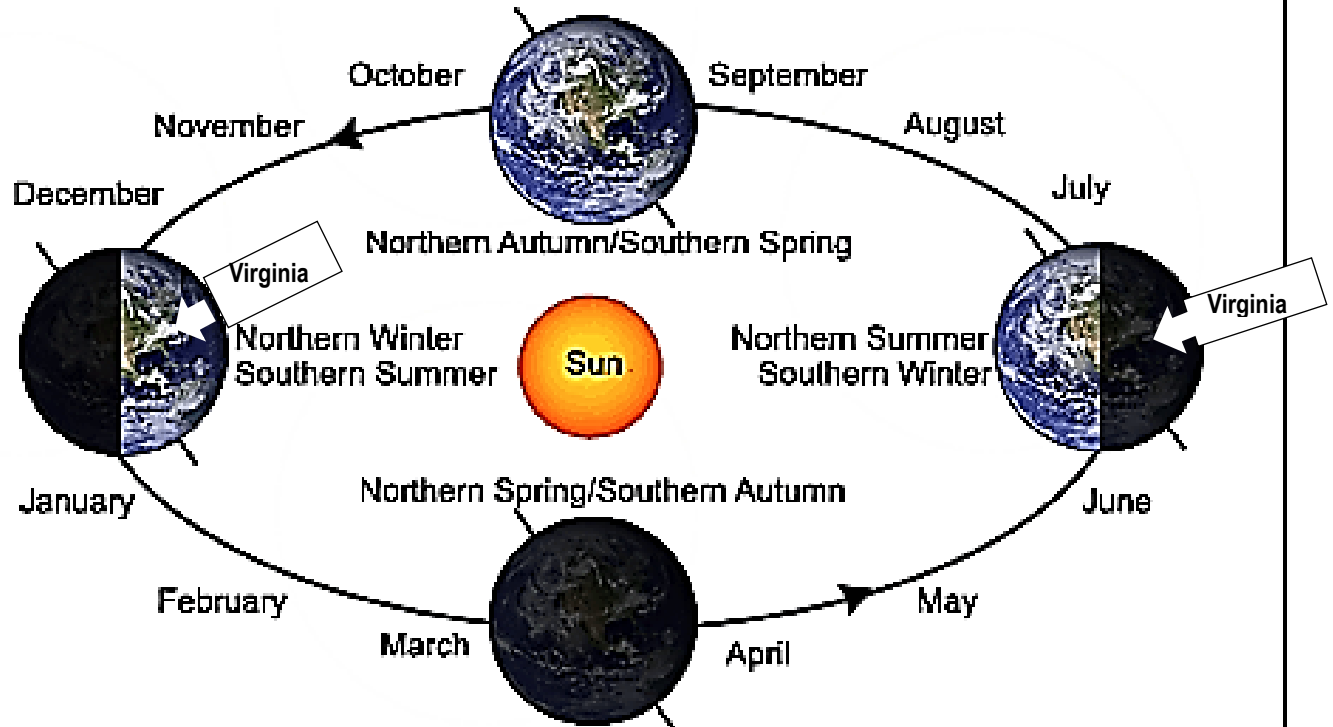
4.8a) the motions of Earth, the moon, and the sun:

1. Rotation	The spinning of a sphere around an axis. <ul style="list-style-type: none">• The reason that we have day & night
2. How long does it take the Earth to make one complete <u>rotation</u> on its axis?	It takes 24 hours.
3. Revolution	A circular journey by one object around another.
4. How long does it take the Earth to make one complete <u>revolution</u> around the sun?	It takes the Earth 365 $\frac{1}{4}$ days.
5. How long does it take the moon to make one complete <u>revolution</u> around the Earth?	It takes the moon about one month.
6. Why do planets circle the sun?	The Sun's gravitational pull
7. Gravity	A pulling force between objects. The more massive the object, the stronger the pull.

4.8b) the causes for Earth's seasons

8. Axial tilt	The amount the Earth is tilted in relation to the path of its orbit.
9. What causes the four seasons on Earth?	The axial tilt causes the seasons.
10. The sun is aimed at the Northern Hemisphere. What season is it?	It is summer in Virginia and in the Northern Hemisphere. <ul style="list-style-type: none">• We experience the "longest day" of the year.• More sunlight equals more heat.
11. What season is the Northern Hemisphere experiencing when: The North Pole is tilted away from the Sun, and the Sun is aimed at the Southern Hemisphere?	It is winter in Virginia and in the Northern Hemisphere. <ul style="list-style-type: none">• The sun seems to be lower on the horizon• The rays don't feel as warm• It gets dark earlier

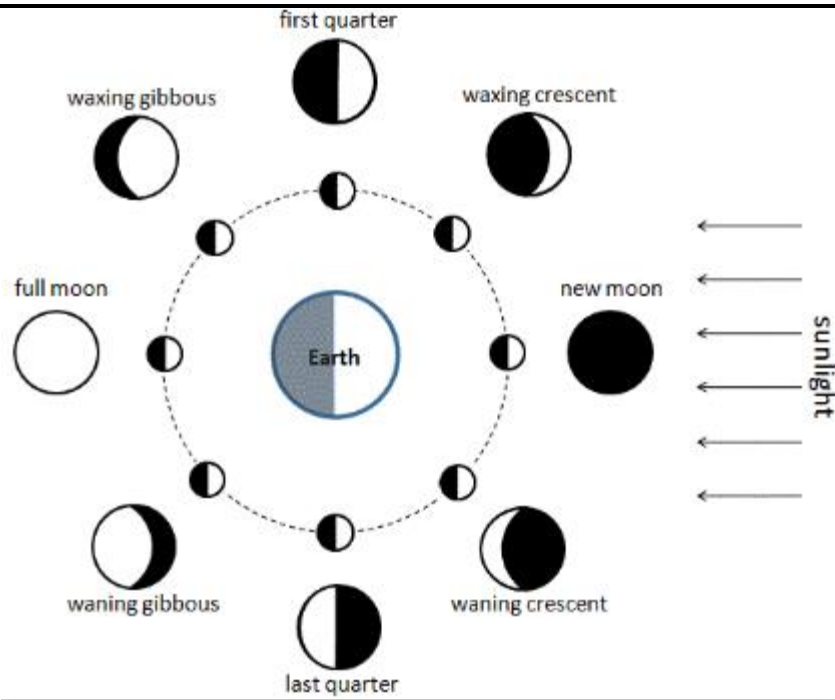
Seasons



4.8c) the causes for the phases of the moon

12. What causes the phases of the moon?	The phases of the moon are caused by its position relative to Earth and the sun.
13. Moon phases	The different appearances of the moon as it orbits the Earth.
14. Crescent	The phase where less than half of the moon is visible.
15. Gibbous	The phase where more than half of the moon is visible.
16. Waxing:	The phase of the moon where it appears to be growing larger because more and more of it is visible each night. (Wax to the Max)
17. Waning	The phase of the moon where it appears to be shrinking because less and less of it is visible each night. (Less and Less)
18. What are the basic phases of the moon?	<ul style="list-style-type: none"> New moon Waxing crescent 1st quarter Waxing gibbous Full moon Waning gibbous Last quarter (third quarter) Waning crescent

19.

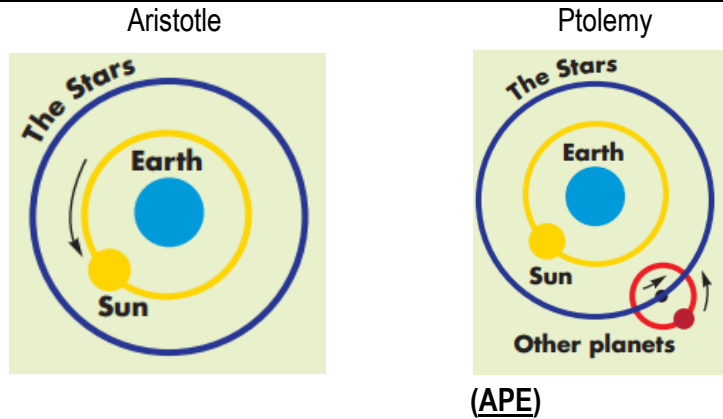


4.8d) the relative size, position, age, and makeup of Earth, the moon, and the sun

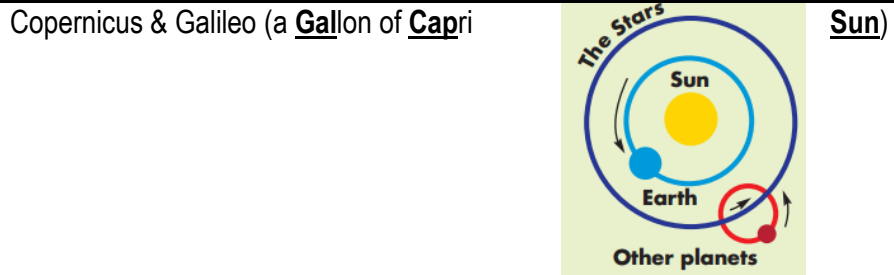
20. About how old is the Sun?	About 4.6 billion years old
21. What is the color of the Sun	An average sized-yellow star
22. Describe the size of the Sun.	<ul style="list-style-type: none"> • 110 times the diameter of Earth • Mass: As heavy as 330,000 Earths
23. What is the Sun made of (its overall composition)?	Mostly hydrogen and helium
24. What is the distance between the Earth and the Sun?	150 million km
25. Satellite	Something that orbits another object of a larger size. The moon is a satellite of Earth.
26. Describe the moon.	<ul style="list-style-type: none"> • A small rocky satellite. • About one quarter the diameter of Earth and one eighth its mass. • Has extreme temperatures. • Has almost no atmosphere, no life, and very little water.
27. Describe the Earth's position in the solar system.	<ul style="list-style-type: none"> • 3rd planet from the sun. • One of the 4 terrestrial inner planets. • About 150 kilometers from the sun.
28. Describe the Earth.	<ul style="list-style-type: none"> • A geologically active planet with a surface that is constantly changing. • Has life supporting water and an oxygen rich atmosphere. • Protective atmosphere blocks out most of the sun's damaging rays.

4.8e) historical contributions in understanding the Earth-moon-sun system.

29. Which astronomers believed that the Earth was the center of the solar system?



30. Which astronomers believed that the solar system was sun centered?



31. What is an Astronaut?

A person trained for spaceflight who participates in a space mission and conducts research inside and outside the spacecraft or space station.

32. Describe the historical contribution of NASA and the Apollo missions.

The NASA Apollo missions added greatly to our understanding of the moon.

33. What is an astronomer?

A scientist who studies the solar system and the universe beyond